



THUNDER

AMPLIFIER OWNER'S MANUAL



THUNDER4250D

THUNDER6500D

THUNDER81000D

**POWER
AMPLIFIERS**



THUNDER®
AMPLIFIERS

Introduction

CONGRATULATIONS

on your purchase of a new MTX Thunder Amplifier! MTX has long been the industry leader in mobile enclosures and speakers, and we have reached new heights with the development of the new MTX Thunder amplifiers. You couldn't have chosen a more reliable, powerful, or better performing amplifier – In fact, we back up every Thunder amplifier with a three-year warranty if installed by an authorized MTX retailer (see the warranty statement on page 34).

Your new MTX Thunder amplifier was designed, built and thoroughly tested at our state-of-the-art electronics manufacturing facility in Phoenix, Arizona. We manufacture every amplifier using the latest Intelligent Surface Mount Technology. Some of the advantages of the new design are its significant improvements to the amplifier's electrical and mechanical properties. ISMT devices feature substantially shorter internal and external lead lengths. This reduces stray capacitance and inductance, which results in cleaner and more accurate musical reproduction with significantly less noise interference. The ISMT mounter produces amplifier boards with smaller and lighter components, which are more resistant to vibrations inherent in the automotive environment.

A word about power ratings. It is important for you to know how they stack up. MTX has chosen the most honest, most conservative way to rate our amps. We show you the RMS power, at 12.5 volts, and dynamic power at 14.4 volts. However, we go above and beyond the call of duty. We test each amplifier. The technician records the "actual"

power output, and records this number on your Certified Performance Certificate. The amplifier must meet or exceed the rated specification before we'll ship it. No questions. No exceptions.

We want to ensure you get continuous high performance from your MTX Thunder amplifier, so we recommend that you have it professionally installed by your authorized MTX dealer.

HOW TO USE THIS MANUAL

If you are installing this amplifier yourself, we recommend that you read the manual cover-to-cover before you install it. Familiarize yourself with the features and details on the input and output panels. Make sure you have all the equipment you need. Sample installation diagrams may be found on our website:

WWW.MTXAUDIO.COM

If you have any questions, write or call us at:

MTX
4545 E. Baseline Rd.
Phoenix, AZ 85040
1-602-438-4545
1-800-CALL-MTX
technical@mtxaudio.com
www.mtxaudio.com
Register your warranty online

Features

- Intelligent Surface Mount Technology
- Patented PWM MOSFET Switching Power Supply (#5,598,325)
- Adaptive Class D Technology
- High Powered Transformer
- High Powered stacked inductor
- Pure N-Channel Design
- Doubles power into 2 ohms
- Real Time Computerized Protection Circuit
- Color-coded wire harness for speaker-level input installation on Thunder4250D and 6500D
- Smart-Engage™ auto turn on for easy integration with factory head units Thunder4250D and 6500D
- Acoustically Seamless Turn-on/Turn-off (i.e. no noise)
- Variable frequency low-pass crossover, 40Hz to 200Hz, 24dB/octave low pass
- Defeatable compression circuit included on Thunder6500D and Thunder81000D
- Continuously adjustable and defeatable Bass EQ enhancement circuitry, centered at 40Hz
- Low level inputs
- EBC - External Bass Control Port with an additional 3dB of gain when used, and 23dB attenuation
- Adjustable input sensitivity
- Buffered RCA Outputs for daisy-chaining additional bass amplifiers
- Nickel-plated, heavy duty terminal block type connectors
- Unique rubber Insulated Iso-Feet™

Specifications

THUNDER4250D

RMS Power measured at 12.5 Volts DC:

125 Watts x 1 into a 4 Ohm load with less than 1% Thd+N

250 Watts x 1 into a 2 Ohm load with less than 1% Thd+N

Dynamic Power measured at 14.4 Volts DC

200 Watts x 1 into a 4 Ohm load

350 Watts x 1 into a 2 Ohm load

Signal to Noise Ratio: ≥ 100 dB A-Weighted

Damping Factor: >200

Frequency Response: 20Hz-200Hz

Maximum Input: 8Vrms

Thunder EQ: Variable Bass Boost (0-18dB) centered at 40Hz

Crossover: Variable 40Hz to 200Hz, 24dB/octave low pass

Dimensions: 7" x 9.75" x 2" (17.8cm x 24.8cm x 5.1cm)

9.9" x 9.75" x 2.1" (23.6cm x 24.8cm x 5.3cm) Including IsoFeet™

THUNDER6500D

RMS Power measured at 12.5 Volts DC:

250 Watts x 1 into a 4 Ohm load with less than 1% Thd+N

500 Watts x 1 into a 2 Ohm load with less than 1% Thd+N

Dynamic Power measured at 14.4 Volts DC

450 Watts x 1 into a 4 Ohm load

775 Watts x 1 into a 2 Ohm load

Signal to Noise Ratio: ≥ 100 dB A-Weighted

Damping Factor: >200

Frequency Response: 20Hz-200Hz

Maximum Input: 8Vrms

Thunder EQ: Variable Bass Boost (0-18dB) centered at 40Hz

Crossover: Variable 40Hz to 200Hz, 24dB/octave low pass

Dimensions: 11.5" x 9.75" x 2" (29.2cm x 24.8cm x 5.1cm)

13.9" x 9.75" x 2.1" (36.6cm x 24.8cm x 5.3cm) Including IsoFeet™

THUNDER81000D

RMS Power measured at 12.5 Volts DC:

500 Watts x 1 into a 4 Ohm load with less than 2% Thd+N

1000 Watts x 1 into a 2 Ohm load with less than 2% Thd+N

Dynamic Power measured at 14.4 Volts DC

850 Watts x 1 into a 4 Ohm load

1500 Watts x 1 into a 2 Ohm load

Signal to Noise Ratio: ≥ 100 dB A-Weighted

Damping Factor: >100

Frequency Response: 20Hz-200Hz

Maximum Input: 8Vrms

Thunder EQ: Variable Bass Boost (0-18dB) centered at 40Hz

Crossover: Variable 40Hz to 200Hz, 24dB/octave low pass

Dimensions: 15.4" x 9.75" x 2" (40.1cm x 24.8cm x 5.1cm)

17.8" x 9.75" x 2.1" (45.2cm x 24.8cm x 5.3cm) Including IsoFeet™

Recommended Fuse = 150A

1. Gain Controls – These controls are used to match the input sensitivity of the amplifier to the particular source unit that you are using. The controls are factory set to 1Vrms.

2. Thunder EQ - This equalization circuit is used to enhance the low frequency response of the vehicle's interior. With up to 18 dB of boost and centered at 40Hz, the Bass EQ can be adjusted to meet your own personal taste.

3. Frequency Control - This control is continuously adjustable from 40Hz through 200Hz at 24dB per octave. Factory setting is at 40Hz.

4. RCA Input Jacks - RCA type input jacks for use with source units that have RCA or Line Level Outputs. A source unit with a minimum output level of 200mV is required for proper operation. However, this input will accept levels up to 8Vrms.

5. EBC 2- The EBC, or Electronic Bass Control, allows a remote bass control to be adjusted from the driver's seat. If the optional EBC is installed, the bass level will be able to be adjusted to overcome noise and other interference. With EBC 2 multiple amplifiers can be controlled.

6. RCA-Output Jacks - These RCA outputs allow for a signal to be sent to other amplifiers in a daisy-chain configuration. The RCA outputs also allow for multiple bass amplifiers to be level controlled using one EBC.

7. Speaker Level Inputs – This input will allow the Thunder425D and 6500D to operate from source units with speaker-level outputs. Output speaker leads from the source unit should be tied directly to the wire harness provided with the amplifier.

Wire harness color codes:

Grey / Black = Source units right negative (-)
Solid Grey = Source units right positive (+)

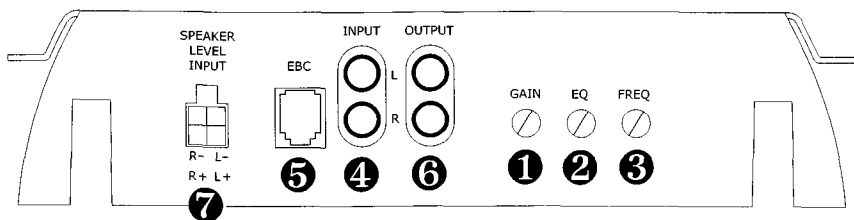
White / Black = Source units left negative (-)
Solid White = Source units left positive (+)

With the Smart-Engage™ auto-turn circuit, a remote turn-on wire is not necessary when connecting the speaker-level input wire harness to a high powered source unit. The amplifier will automatically turn on when music is received.

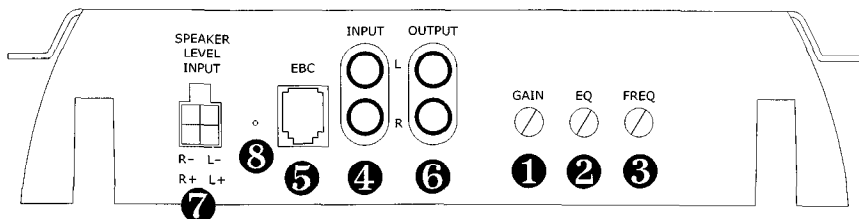
8. Compression Circuit - This new circuit, found on the Thunder6500D and Thunder81000D, prevents the amplifier from going into clipping, even at high SPL levels. The compression circuit allows the listener to play the amplifier at high volume levels, yet protects the speakers against the potential damage that can occur during dynamic musical passages. The circuit is switchable on/off, for those SPL competitors who run their amplifiers into clipping on purpose. **Warning** - Damage to speakers may occur when the compression circuit is in the off position.

Input Panel Layout

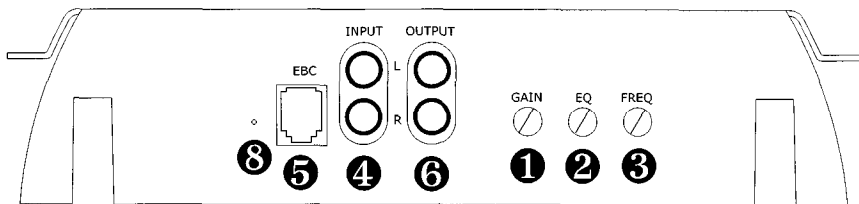
THUNDER4250D



THUNDER6500D



THUNDER81000D



1. Fuses- For convenience, all amplifiers utilize ATC type fuses. For continued protection in the event that a fuse blows, replace the fuse only with the same value.

Caution - The power fuses on the amp are for protecting the amp against overdrive. To protect the vehicle's electrical system, an additional fuse is required within 18" of the battery on the 12V+ cable.

Thunder4250D - 20A x 2

Thunder6500D - 25A x 3

Thunder81000D - 150 Amps (not supplied)

2. Power Terminal - This terminal is where the power source of the vehicle is connected. The 12V+ must be connected directly to the positive battery post. It is highly recommended that you place an additional fuse within 18" of the battery connection. Be sure to use the correct gauge of power cable! If wire of insufficient size is used, there will be a voltage drop and the amp will starve, causing poor performance. In an extreme case, the amp may shut down due to the low battery voltage protection feature. The terminal closest to the fuse(s) is where the power cable with connector should be installed. Be sure to make your connection clean to avoid any shorting to the other terminals. Always double check all of the connections for any discrepancies..08

Thunder4250D - 6-8 Gauge

Thunder6500D - 4-6 Gauge

Thunder81000D - 1/0 Gauge only

3. Remote Terminal - This is the wire that turns the amplifier on and off. This terminal connects to the amp turn-on lead or the power antenna lead coming from the source unit. If the source unit doesn't have one of these wires, you can either run a wire to the battery with a switch or use an ignition controlled wire to power up the amp. If you use the ignition controlled wire, be aware that the amplifier will be on, as long as the car is on. When using the Smart Engage™ feature, a high powered radio, and speaker level inputs it is not necessary to connect the Remote Terminal.

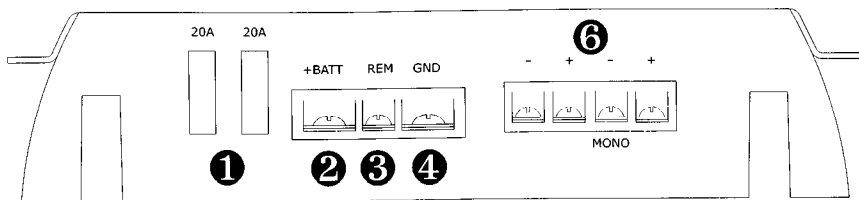
4. Ground Terminal - The ground terminal connects the amplifier to the vehicle ground. Be sure to use the same size wire gauge or larger as the +12V connection. A strong ground point is very important. A little screw through the body is not acceptable. The cable should be as short as possible and connected to the chassis of the vehicle. The contact point should be free of paint and debris for best results. All precautions for the 12V+ connection apply to this connection as well.

5. Power LED (top of heatsink)- A lighted LED indicates that power has been applied to the amplifier. +12V from the battery to the +BATT terminal (#10) and +12V from a switched ignition or remote lead from a head unit. An unlighted LED indicates power has been removed or the amplifier has overheated. In the case of the overheat condition, the amplifier will turn back on after it cools down.

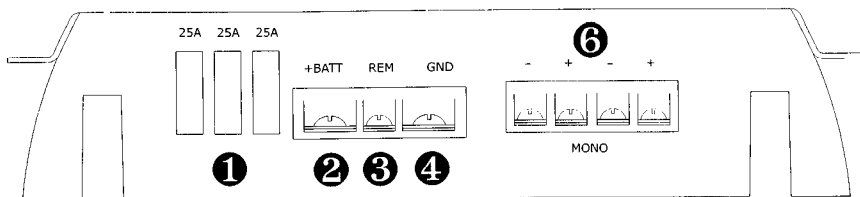
6. 4 Term Block- The + and - terminals connect the speaker to the amplifier. 2 ohm minimum impedance is allowed.

Output Panel Layout

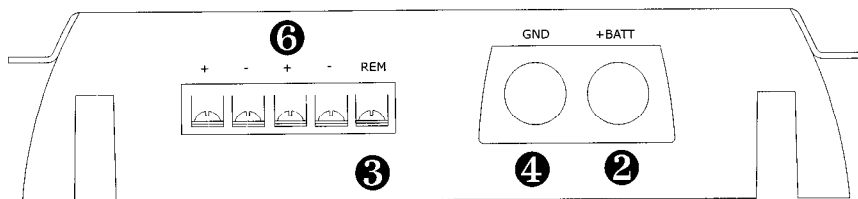
THUNDER4250D



THUNDER6500D



THUNDER81000D



Adjusting the Gain

1. Turn the gain control on the amplifier all the way down.
2. Turn up the volume control on the source unit to approximately 3/4 of maximum.
3. Adjust the gain control on the amplifier until audible distortion occurs.
4. Adjust the gain control down until audible distortion disappears.
5. The amplifier is now calibrated to the output of the source unit.

Definitions of Common Terms

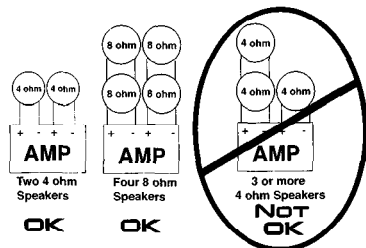
The following list of terms with their definitions is offered as help in understanding the set-up and operation of your amplifier.

1. **Crossover (xover)** - an electrical filter with high-pass or low-pass characteristics that divides the frequency range into playable bands for certain speakers. Subwoofers, mid-bass, midrange and tweeters are all designed to play different frequencies and should do so to avoid damage. The xover point is where the playable frequencies cross from one speaker to the next at -3dB below reference level.
2. **Full-range** - refers to signals which cover the entire audio frequency span from 20Hz to 20kHz.
3. **High-pass** - simply put, this blocks lower frequencies which damage smaller speakers, and passes the higher frequencies for smaller speakers like the midrange and tweeter.
4. **Low-pass** - You got it, this is the inverse of a high-pass. It blocks higher frequencies and passes the playable lower frequencies to the larger speakers, like subwoofers.

Typical Speaker Wiring Configurations

Mono Amplifier Impedance Requirement

2 ohm minimum



5. **Impedance** - the resistance to the flow of current in an alternating current circuit (such as with music). Line level circuits are typically a high impedance of several thousand ohms, while speaker level circuits are usually a low impedance of a few ohms.
6. **Line level** - The type of signal produced at the outputs of tape decks, CD tuners, preamplifiers, etc., with a typical value of a volt or less in a high impedance circuit.
7. **Speaker level** - The type of output that is meant to drive speakers. These signals are sometimes called high level and are usually connected by two conductor speaker wires.
8. **Signal** - The signal of an audio system is what is heard from the speakers. These signals may be high pass, low pass or full-range.

We don't have enough space for Electronics 101, so if you have a good, bad or amusing question, please call us TOLL FREE at 800-CALL-MTX! (800-225-5689)

Troubleshooting Guide

Read this if you wanna be a do-it-yourselfer -- or give us a call at 1-800-CALLMTX.

<u>Problem</u>	<u>Cause</u>	<u>Solution</u>
No LED indication	No +12V at remote connection	Supply +12V to terminal
	No +12V at Power connection	Supply +12V to terminal
	Insufficient ground connection	Verify ground connection
	Blown power fuse	Replace fuse
LED on, no output	Volume on head unit off	Increase volume on head unit
	Speaker connections not made	Make speaker connections
	Gain control on amplifier off	Turn up gain
	Signal processing units off	Apply power to signal processor
	All speakers blown	Replace speakers
Output distorted	Head unit volume set too high	Lower head unit volume
	Amplifier gain set too high	Lower amplifier gain
Balance reversed	Speakers wired L + R reversed	Wire speakers with correct orientation
	RCA inputs reversed	Reverse RCA inputs
Some balance reversed	Some Speakers wired L + R reversed	Wire speakers with correct orientation
	Some RCA inputs reversed	Reverse appropriate RCA inputs
Bass is boomy	Thunder EQ too high	Lower setting
Bass is weak	Thunder EQ too low	Raise setting
	Speakers wired out of phase	Wire with correct phase
	Not using MTX woofers	Buy MTX woofers
Blowing fuses	Excessive output levels	Lower volume
	Amplifier defective	Return for service

Warranty

All MTX Thunder Amplifiers purchased in the USA are guaranteed against defects in material and workmanship for a period of three years from the date purchased by the end user, if the amplifier is installed by an authorized MTX dealer (one year, if installed by the consumer). This warranty is limited to the original retail purchaser of product. MTX disclaims any liability for the other incurred damages resulting from product defects. Any expenses incurred in the removal and reinstallation of amplifiers are not covered by this warranty. MTX's total liability will not exceed the purchase price of the amplifier. This warranty is valid only in the USA.

To ensure efficiency and full benefit on any warranty claim during the warranty period stated above, MTX requests the return of the warranty registration card, completed in full immediately following purchase. Proof of purchase must be provided at time of warranty claim. If there is no proof of purchase provided with the warranty claim, MTX reserves the right not to honor the warranty set forth above. Therefore, labor and parts may be charged to you.

This warranty does not apply to product exterior and cosmetics. Misuse, abnormal service or handling, improper alterations or modifications in design or construction void this warranty.

No sales personnel of the seller, or any other person is authorized to make any warranties other than those described above or to extend the duration of any warranties on behalf of MTX beyond the time period described above.

For Warranty Inquiries, please call:

1-800-225-5689

1-602-438-4545

MTX

4545 E. Baseline Rd.

Phoenix, Arizona 85040

Register Warranty On-line:

www.mtxaudio.com

MTX THUNDER81000D



#201EAJ0000M



The Pointe at South Mountain
4545 East Baseline Road
Phoenix, AZ 85040
602-438-4545
800-225-5689
www.mtxaudio.com

Please fold and seal with tape

WARRANTY REGISTRATION & CUSTOMER SURVEY

NAME _____

PHONE _____ AGE _____

ADDRESS _____

OCCUPATION _____

DEALER NAME _____ CITY _____

MTX MODEL NO. _____

DATE PURCHASED _____ INSTALLED BY _____

VEHICLE TYPE _____ YEAR _____ MAKE _____ MODEL _____

1. WAS THIS UNIT: ☐ Purchased for personal use ☐ Received as a gift
2. HOW DID YOU FIRST LEARN OF MTX?
☐ Dealer ☐ Radio ☐ TV ☐ Newspaper ☐ Catalog
☐ Friend/Family ☐ Store display
☐ Magazine (Circle the magazine) Motor Trend Car and Track Rolling Stone Lowrider
Truckin' Autosound and Security Car Sound Car Audio and Electronics Car Stereo Review
☐ Other _____
3. IS THIS: ☐ Your first car stereo ☐ Replacement/Upgrade
4. WHAT WAS THE MAIN REASON YOU SELECTED THIS MTX PRODUCT?
☐ Dealer recommendation ☐ MTX Name/reputation ☐ Friend/family recommendation
☐ Product Appeal ☐ Sound ☐ Price ☐ Other _____
5. WHAT ARE THREE THINGS YOU LIKE MOST ABOUT THIS MTX PRODUCT?
☐ Styling ☐ Sound Quality ☐ Power handling ☐ Bass Reproduction
☐ Durability ☐ Installation Flexibility
6. HOW SATISFIED ARE YOU WITH THIS PRODUCT?
☐ Very Satisfied ☐ Satisfied ☐ Neutral ☐ Not Satisfied
7. WHERE DO YOU BUY YOUR TAPES AND CD'S?

COMMENTS



THUNDER81000D

Amplifier Input Connections

AMPLIFIER

CAR STEREO
(SOURCE UNIT)

RCA Input

Remote/Power Antenna
Turn-On Wire

REQUIRED INSTALLATION TOOLS:

Power Drill

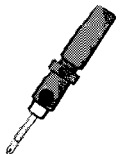
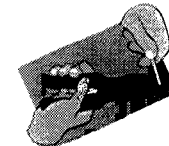
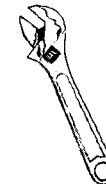
Utility Knife



Adjustable Wrench

• Crimpers

• Screw Driver



For installation options go to www.mtxaudio.com

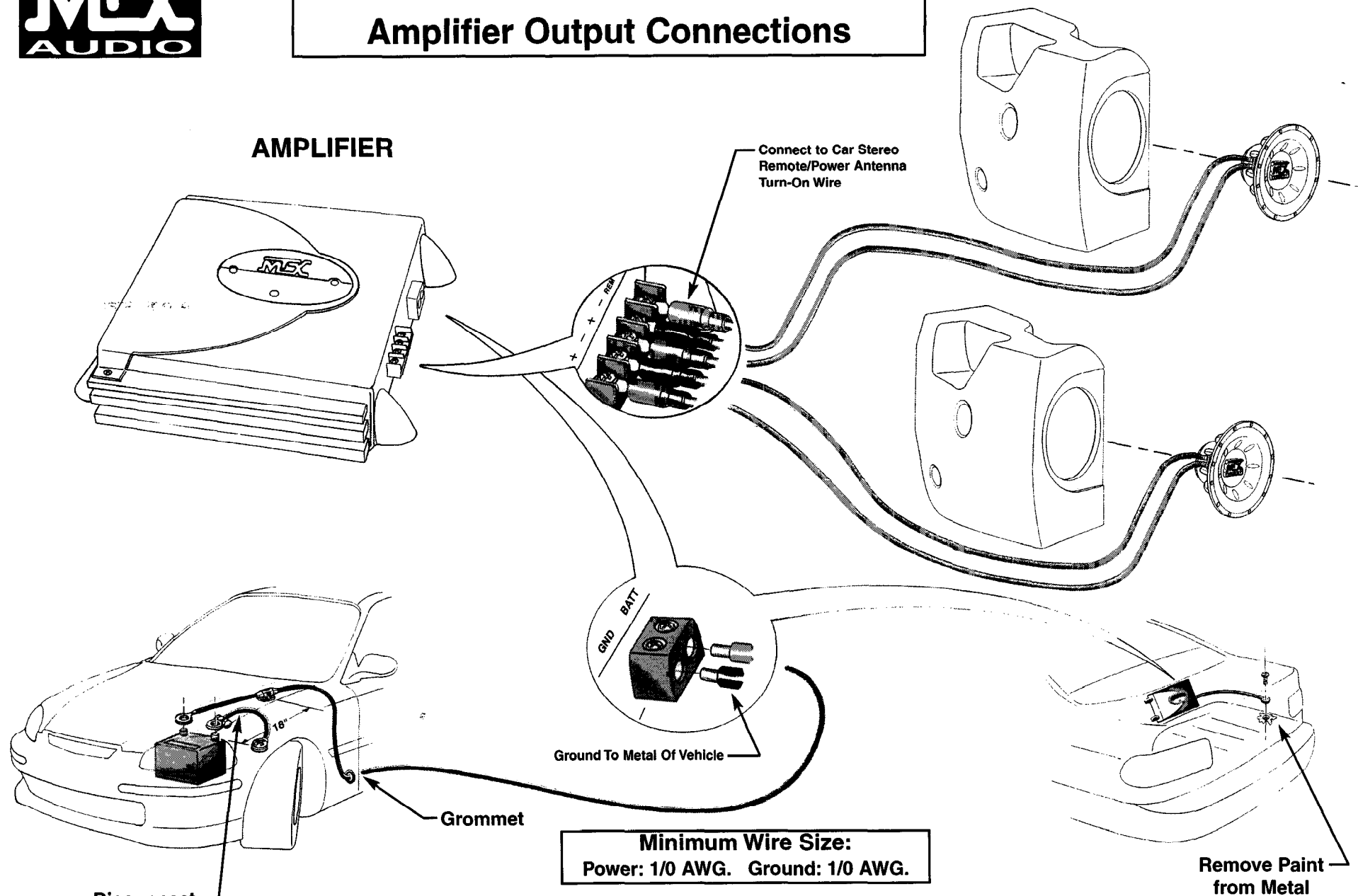
Part #: NDM178



THUNDER81000D

Amplifier Output Connections

AMPLIFIER



CAUTION: This amplifier may draw in excess of 150 Amps of current.
Upgrading the vehicle's factory battery and alternator is required.
(For specific details, contact your local authorized MTX dealer, or call 1-800-CALL-MTX.)

For installation options go to mtxaudio.com